

CLAIMS

1. A method for determining optical status of each individual eye of a pair of eyes of a subject comprising the steps of:

- A) imaging both of said pair of eyes using a digital imaging device while utilizing a standard set of uniform imaging conditions and visual tasks while performing said imaging,
- B) isolating a retinal reflex from each of said pair of eyes,
- C) applying a series of algorithms to statistically determine a plurality of parameters related to each said retinal reflex.

2. A method as set forth in claim 1 further comprising the step of establishing validity of a subsequent analysis of image data by determining the monocular state of fixation of each of said pair of eyes.

3. A method as set forth in claim 1 further comprising the step of reducing the image data to a common clinical state, whereby valid mathematical manipulation of image data either as individual or composite group measurements is permitted.

4. A method as set forth in claim 3 further comprising the step of collecting all data from a plurality of subjects in the same manner and utilizing a reproducible visual task, and achieving and confirming that each said subject's gaze is in "Optimal Visual Perception".

5. A method as set forth in claim 1 further comprising the step of comparing said plurality of parameters from each said retinal reflex taken from said individual to a like set of parameters taken from a normal retinal reflex.

6. A method as set forth in claim 1 further comprising the step of comparing said plurality of parameters from each said retinal reflex taken from said individual to a like set of parameters taken from a normal eye.

7. A method as set forth in claim 1 further comprising the step of comparing said plurality of parameters from one of said retinal reflexes taken from said individual with parameters from the other of said retinal reflexes taken from said individual.

8. A method as set forth in claim 2 further comprising the step of presenting said plurality of parameters from one of said retinal reflexes taken from said individual and said parameters taken from a normal retinal reflex in a circular graphical format.

9. A method as set forth in claim 6 further comprising the step of superimposing said plurality of parameters from one of said retinal reflexes taken from said individual over said parameters taken from a normal retinal reflex.

10. A method as set forth in claim 6 further comprising the step of calculating a range of said parameters taken from a normal retinal reflex and superimposing said plurality of parameters from one of said retinal reflexes taken from said individual over said range of said parameters taken from said normal retinal reflex

11. A method as set forth in claim 5 further comprising the steps of presenting said plurality of parameters from one of said retinal reflexes taken from said individual and said parameters from the other of said retinal reflexes taken from said individual in a circular graphical format, with said parameters from one of said retinal reflexes arranged on one side of said circular graphical format and said parameters from the other of said retinal reflexes arranged symmetrically on the other side of said circular graphical format.

12. A method as set forth in claim 1 further comprising the step of selecting said algorithms based on their predictivity of eye disorders.

13. A method as set forth in claim 1 further comprising the step of selecting said algorithms based on their predictivity of ocular balance between said retinal reflexes.

14. A method for determining disorders of eyes of a subject comprising the

steps of:

- A) obtaining a retinal reflex in digital format from each of said eyes,
- B) performing a series of statistical calculations on each said retinal reflex, said statistical calculations performed on selected areas of each said retinal reflex,
- C) comparing said statistical calculations taken from one said retinal reflex with the same statistical calculations taken from the other said retinal reflex,
- D) plotting results from said step of comparing so that certain eye disorders that may be present in said subject are evident.

15. A method as set forth in claim 14 further comprising the step of plotting said results in a circular plot, with said statistical calculations taken from one said retinal reflex arranged along one side of said circular plot and said statistical calculations taken from the other said retinal reflex positioned on the other side of said circular plot, with identical statistical calculations from each said retinal reflex being in opposed relation.

16. A method for determining disorders of eyes of a subject comprising the steps of:

- A) obtaining a retinal reflex in digital format from each of said eyes,
- B) performing a series of statistical calculations on each said retinal reflex, said statistical calculations performed on selected areas of each said

retinal reflex,

C) comparing said statistical calculations taken from one said retinal reflex with the same statistical calculations taken from a normal eye reflex or a known data distribution from some disease or ocular state,

D) plotting results from said step of comparing so that certain eye disorders that may be present in said subject are evident in said plot.

17. A method as set forth in claim 16 further comprising the step of plotting said statistical calculations taken from a normal eye reflex in a circular plot, with said statistical calculations taken from one of said retinal reflexes of said subject being superimposed over said plot of said statistical calculations taken from a normal eye.

18. A method for statistically determining a plurality of values of generic disease groups, and comprising the steps of:

A) obtaining photometric imaging readings of wavefront ocular images using uniform imaging circumstances for each of said wavefront ocular images, said wavefront ocular images taken from persons with clinically known disease processes,

B) Grouping persons with similar disease processes or associated ocular states together in clinical subgroups,

C) Summing values of those identical algorithms found in said clinical sub-groups to obtain statistical measurements and then performing a

statistical analysis on said statistical measurements to obtain statistical data,

D) Utilizing said statistical data to define features in graphic format that characterizes values of the sub-group with a particular disease.

Patent for 2003/0060000